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December 24, 2018

Dr. Bruce Anderson
Chair
Fuel Tank Advisory Committee
Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Attention: Ms. Thu Perry

Dear Dr. Anderson and Ms. Perry:

Subject: Honolulu Board of Water Supply (BWS) Comments on draft "Report to the Thirtieth Legislature, State of Hawaii, 2019, Pursuant to Section 342L-62 Hawaii Revised Statutes, The Third Annual Fuel Tank Advisory Committee Meeting to Study the Issues Related to Leaks of Field-Constructed Underground Storage Tanks at Red Hill Bulk Fuel Storage Facility and Four Other DOD Facilities", Prepared By: State of Hawaii, Department of Health (DOH), Underground Storage Tank Section, dated December 2018

The BWS appreciates the opportunity to be a member of the Fuel Tank Advisory Committee (FTAC) and participate in the FTAC meeting held on November 1, 2018 and also those in 2016 and 2017. BWS also participates as a subject matter expert (SME) pursuant to the Red Hill Bulk Fuel Storage Facility (RHBFSF) Administrative Order on Consent (AOC) Statement of Work (SOW) by reviewing various work documents and attending AOC technical meetings.

The BWS reviewed the subject draft report and offers the following comments.

General Comments

Under Chapter 342L, Section 62, the FTAC is required to submit a report after its annual meeting on its findings, including groundwater test results, and recommendations, including any proposed legislation, to the legislature. The draft report summarizes the 2018 meeting discussions but does not include recent groundwater test results, nor any recommendations and/or proposed regulations as is required under the FTAC charter.

Opening Remarks – Rear Admiral Brian Fort

Page 3, Paragraph 2: The report states that the Rear Admiral specifically stated that the work to continually "modernize" the RHBFSF was being done to ensure safe operations and emphasized that the RHBFSF is considered "critical infrastructure" by the Department of Defense. This is all the report states about his opening remarks. In fact, Rear Admiral Fort made several claims, critical infrastructure was just one, that were presented as factual statements, and the BWS rejects as either incorrect or misleading certain of these statements as discussed in greater detail below. The DOH should consider adding considerable text to this paragraph to more accurately describe the Rear Admiral's remarks. The BWS believes the report should reflect an accurate account of the discussions and presentations made at the meeting to ensure content correctness.

For example, Rear Admiral Fort stated: "The Navy doubles the American Petroleum Institute approved industry standard for steel liners on the tanks at Red Hill. Those tanks as designed are quarter-inch steel; that's 0.25-inches. The API standard for such liners is only 0.05 inches." The API standard referenced by the Rear Admiral is for aboveground tanks and does not apply to the underground tanks at the RHBFSF. Instead, the Navy presentation appears to have misinterpreted an API standard that does not apply to the RHBFSF. Namely, the standard prescribes a minimum thickness (0.05 inches) for the floor of an aboveground tank with secondary containment. The loading and behavior of dome and barrel liners differ fundamentally from the floor of an aboveground tank, and there is no secondary containment for the RHBFSF tanks (as demonstrated in the 2014 release). There is, therefore no additional factor of safety on the Navy's provision for remaining wall thickness as stated by the Navy.

In another example, the Rear Admiral stated: "Each of these tanks must pass an annual tank tightness test as part of our modernization. No tank has ever failed a tank tightness test". The Navy reliance on tank tightness testing results does not prove that the tanks are not leaking. It is a fact that the RHBFSF tanks can test "tight" yet still leak up to 0.5 gallon/hour of fuel through the steel liner. For a RHBFSF tank, that may result in the loss of up to 4,000 gallons of fuel in a given year.

The Rear Admiral also stated that "the [Tank 5] fuel release, now almost 5 years ago, was the one and only release to the public since the Clean Water Act of 1988. The one and only release." This is inconsistent with available records of the leak history at the RHBFSF. The BWS, by simply reviewing reports issued by the Navy, found that a release from Tank 6 was reported by the Navy in 2002 (a copy of this Navy completed DOH release report was passed out at the meeting by the BWS). Further, inspection reports provided by the Navy in its recent Tank Inspection Repair and Maintenance report indicate that Tank 15, Tank 16, Tank 19, Tank 10, Tank 5, Tank 17, and Tank 20 underwent inspections after 1988 that identified through-wall corrosion, and, by

extension, leaks occurred. The groundwater data from monitoring wells RHMW01 and RHMW02 are likewise indicative of multiple leaks as evidenced by TPH-d detections in ground water samples. Quite simply, the release from Tank 5 in 2014 is not the only release from the RHBFSF since 1988.

The BWS requests that the DOH amend its report accordingly so the FTAC Report is complete and the State Legislature and the public is adequately informed.

"No conclusions could be made from only a visual observation."

Page 4, Paragraph 6, Third Sentence: "Some of the coupons were selected because they appear to meet the repair criteria while others were chosen for the fact that it would not require repair. The Navy's presentation addressed each coupon that was cut out but emphasized that no conclusion could be made from only a visual observation. ...Page 4, Paragraph 7, First Sentence: HBWS made a formal request for the raw data, anticipated from the laboratory from analysis of the coupons, to be given to them in order to obtain an "independent assessment over the effectiveness of the NDE process."...

The BWS agrees that the Navy selected coupons from two general classes: those that likely needed repair and those expected not to require repair. BWS takes issue with the Navy's statement that "no conclusions could be made from only visual observations." It is BWS opinion that, based on our visual inspection of the coupon's cut edges, it is unlikely the Navy's stated "quantitative validation" criteria (NAVFAC, 2018) will be realized. The Navy's quantitative validation criteria requires that the Navy demonstrate that pit depth is within 20 mils of actual laboratory results and that wall thinning is within 5% of actual laboratory results (NAVFAC, 2018). We believe, even given the very few coupons removed and the limited measurements BWS was allowed to perform, that these observations indicate that the Navy is unlikely to achieve its "quantitative validation" criteria regarding nondestructive evaluation (NDE) techniques. We request that a statement be made in the FTAC report that reflects the uncertainty associated with the current Navy NDE methods and that the Navy should not rely on the unproven accuracy of the NDE in going forward with a single-wall TUA option. Further, the Navy has not allowed BWS to measure the maximum pit depth nor to review the third-party coupon sample laboratory destructive testing report. BWS requests the opportunity to do one or both in order to revisit our preliminary opinions.

TUA Selection ... (identified as Options 1A and Option 1B as a pilot during the question and answer period)

Statement: The Navy identified their planned TUA selection as their current clean, inspect and repair regimen, … identified as options 1A and 2B on Slide #31 of Appendix D and on pages 82 and 83 of Appendix C). The Navy listed two factors in this selection. The first is that historically, the tanks have not failed. The 2014 release was from "bad contractor, bad quality control, bad quality assurance, [and] operator error."

First, the DOH report likely refers to TUA 1B and not TUA 2B (TUA 2B is for a stainless-steel composite wall that, to our understanding, the Navy has not recommended). Contractors were only working on Tank 5 because of defects and deterioration. Therefore, any leaks attributed to their errors, and the Navy's inability to properly supervise and inspect the work, is at the most fundamental level due to tank deterioration. Second, human error is but one of the underlying causes of potential tank leaks. Human errors that increase the likelihood of leaks are not limited to the type of flawed weld repairs that failed in Tank 5, but also include errors in scanning for corroded areas, errors in scanning for weld defects, errors in testing repair patches, and errors in applying and inspecting coatings. The advantage of moving the tanks to a new location that is not over the aquifer is that any leaks due to human errors will not contaminate the drinking water. The advantage of secondary containment is that any leaks through the primary liner due to human errors should be captured by the secondary liner rather than released into the environment.

Specific Comments

The BWS requests that the second and third sentences of the first paragraph on Page 5 be revised as follows: "The Navy identified their planned TUA selection as their current clean, inspect and repair regimen, with many improvements including the installation of a more accurate leak protection system, and a pilot of epoxy coating the bottom dome and barrel of one tank (identified as options 1A and 1B) on slide #31 of Appendix D). Currently, under the Navy's planned TUA selection, only the bottom dome of the tanks will be coated. The Navy stated that there are engineering challenges to coating the whole tank that needs to be addressed in the pilot study."

The BWS requests that the second sentence of the first paragraph be revised as follows: "Mr. Lau reiterated the request to get the corrosion data from the coupons so that HBWS experts could examine independently." Please add sentences following this statement: "Along with Mr. Lau, Senator Thielen also stressed that the Navy send the laboratory report for the coupon samples to the HBWS for independent evaluation. Further, Captain Delao committed to transparency and to sending the HBWS the name of the laboratory that analyzed the coupon samples."

Thank you for the opportunity to comment. If you have any questions, please feel free to call Erwin Kawata, Program Administrator of the Water Quality Division, at 808-748-5080.

Very truly yours,

for ERNEST Y.W. LAU, P.E.
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Reference

NAVFAC, 2018. Red Hill Bulk Fuel Storage Facility Scope of Work for Destructive Testing Supplement - Destructive Testing Plan, Supplement to Administrative Order on Consent (AOC) and Statement of Work (SOW) Section 5.3.2, June 1.